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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,709	09/08/2003	Kuo-Hsing Teng	67,200-1150	2302
7590 TUNG & ASSOCIATES Suite 120 838 W. Long Lake Road Bloomfield Hills, MI 48302		11/16/2007	EXAMINER BUEKER, RICHARD R	
			ART UNIT 1792	PAPER NUMBER
			MAIL DATE 11/16/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/658,709	<b>Applicant(s)</b> TENG ET AL.	
	<b>Examiner</b> Richard Bueker	<b>Art Unit</b> 1792	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 August 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5,9-11,17-20 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,9-11,17-20 and 22-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Claims 1, 2, 5, 9, 11, 17, 18, 20 and 22-34 are rejected under 35 U.S.C. 103(a) as obvious over Harada (6,402,844) taken in view of Fukada (5,733,375). Harada (see Fig. 6 and col. 6, lines 35-45) discloses a vaporizer comprising a tank for containing liquid HMDS primer to form a planar exposed surface of said liquid primer, and a nozzle assembly integrally formed in the ceiling of the tank. The ceiling of the tank can obviously be in the form of a plate and therefore can obviously be a nozzle plate (i.e. the top plate of the tank) comprising a plurality of openings disposed above the planar exposed surface of liquid primer. The openings are arranged for directing a plurality of gas streams onto said planar exposed surface of liquid primer to form primer vapor in a vapor collection space above said planar exposed surface of said liquid primer. Fukada illustrates that it was known in the prior art that the ceiling of an HMDS vaporizer can successfully be formed as a plate. In Fig. 6 of Fukada, the cap 21 contains the nozzle hole 27, and Fig. 2 of Fukada clearly illustrates that the cap 21 is in the form of a plate. Therefore, it would have been prima facie obvious to form the nozzle-equipped ceiling of the tank of Harada as a plate, as illustrated by Fukada. Regarding the limitations of claim 9, the upstream end of the nitrogen gas supply line of Fig. 6 of Harada is "a gas inlet pipe for receiving a primary gas stream" as recited in claim 9. Also, the downstream end of this nitrogen gas supply line is shown in Fig. 6 to be a manifold section, and this manifold section is "a housing having a housing interior provided in fluid communication with said gas inlet pipe". Also, the top plate of the vaporizer body 31 is "a nozzle plate in downstream fluid communication with said

housing, said nozzle plate having a plurality of openings for receiving the primary gas stream and ejecting a plurality of secondary gas streams onto said exposed surface of said liquid primer". Regarding claim 2, the nozzle plate of Harada is "for dividing said primary gas stream" as claimed. Regarding the recitation of plural radially extending rows of openings, it is noted that Fig. 6 of Harada is a schematic diagram, and the particular number of openings and the particular locations of the openings would have been a prima facie obvious matter of choice for one skilled in the art.

It is further noted, however, that the 6 nozzle plate holes schematically illustrated in Fig. 6 of Harada actually do constitute 2 rows of 3 holes each, wherein each of these 2 rows can be seen to extend radially from an arbitrarily designated center point located between the third and fourth nozzle plate hole. Applicants' claims as amended require nothing more than that.

Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada (6,402,844) taken in view of Fukada (5,733,375) for the reasons stated above, and taken in further view of applicants' description of the prior art (see Fig. 1 and page 6, lines 14-18 of applicants' specification) which makes clear that prior art HMDS vaporizers were conventionally equipped with a liquid level sensor, and it would have been obvious to include such a level sensor in Harada's HMDS vaporizer to facilitate refilling of the tank when needed.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harada (6,402,844) taken in view of Fukada (5,733,375) for the reasons stated above, and taken in further view of applicants' description of the prior art. At page 7, lines 17-22 of applicants' specification the operation of the prior art vaporizer illustrated in applicants' Fig. 1 is described as having carrier gas supplied "at a pressure of typically about 50 Kpa", which is 375 torr. It would have been obvious to one skilled in the art to operate a vaporizer of the type shown in Fig. 4 of Fukuda at a pressure of less than atmospheric pressure because applicants teach that a sub-atmospheric pressure is typically used in this type of vaporizer.

Claims 1, 2, 5, 9, 11, 17, 18, 20 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada (6,402,844) taken in view of Fukada (5,733,375) for the reasons stated above, and taken in further view of Bowles (853,915). Bowles (see Figs. 2 and 3) discloses a vaporizer analogous to that of Harada, wherein a nozzle plate directs plural gas streams onto a planar exposed surface of the liquid to be vaporized. In Bowles' vaporizer, the nozzle plate 4 is an integral part of the carrier gas supply manifold 6. If, for the sake of argument, the claims as amended were interpreted to require the claimed nozzle plate to be an integral part of a carrier gas supply manifold, it would have been obvious to one skilled in the art to provide the nitrogen gas supply manifold of Fig. 6 of Harada in the form taught by Bowles, because Bowles teaches one skilled in the art that his manifold and nozzle plate arrangement will successfully accomplish Harada's goal of directing plural gas streams onto the surface of a liquid to be vaporized. Also, Bowles illustrates the use of plural rows of openings 7 (see Fig. 3 of

Bowles). Also, the rows of openings of Bowles are arranged on lines that pass through the center of the nozzle plate 4 and therefore the rows of openings extend radially. It would have been obvious to use this arrangement of openings in the nozzle plate of Harada because Bowles teaches that it successfully accomplishes the goal of Harada.

Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada (6,402,844) taken in view of Fukada (5,733,375) and Bowles (853,915) for the reasons stated above, and taken in further view of applicants' description of the prior art (see Fig. 1 and page 6, lines 14-18 of applicants' specification) which makes clear that prior art HMDS vaporizers were conventionally equipped with a liquid level sensor, and it would have been obvious to include such a level sensor in Harada's HMDS vaporizer to facilitate refilling of the tank when needed.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harada (6,402,844) taken in view of Fukada (5,733,375) and Bowles (853,915) for the reasons stated above, and taken in further view of applicants' description of the prior art. At page 7, lines 17-22 of applicants' specification the operation of the prior art vaporizer illustrated in applicants' Fig. 1 is described as having carrier gas supplied "at a pressure of typically about 50 Kpa", which is 375 torr. It would have been obvious to one skilled in the art to operate a vaporizer of the type shown in Fig. 4 of Fukuda at a pressure of less than atmospheric pressure because applicants teach that a sub-atmospheric pressure is typically used in this type of vaporizer.

Applicants have argued that Harada discloses a linear pattern of nozzles and does not disclose or suggest a planar dispersed pattern of nozzles or openings in a

nozzle plate. It is noted, however, that the linearly arranged holes of Fig. 6 of Harada are dispersed, and in a plane, and are therefore are "a planar dispersed pattern of nozzles or openings in a nozzle plate" as claimed. Furthermore, the 6 nozzle plate holes schematically illustrated in Fig. 6 of Harada actually do constitute 2 rows of 3 holes each, wherein each of these 2 rows can be seen to extend radially from an arbitrarily designated center point located between the third and fourth nozzle plate hole. Applicants' claims as amended require nothing more than that.

Applicants have argued that it is unobvious and therefore patentable to provide the ceiling of Harada's Fig. 6 tank in the form of a plate. It is noted, however, that it was common and well known in the prior art to use a plate shaped ceiling for the ceiling of a tank. Fukada illustrates this fact. It would have been at the least obvious to provide the ceiling of Harada's tank in the shape of a plate, because Fukada teaches that a plate shape will perform all necessary functions that are required of a tank ceiling.

Applicants have argued that Harada does not teach the "reduced droplet formation" which is referred to in the preamble of claims 1 and 17. It is noted, however, that the word "reduced" is a relative term, and applicants' claims fail to state what the "reduced primer droplet formation" is measured relative to. Harada's apparatus is inherently capable of reducing droplet formation compared to a vaporizing process that generates large amounts of droplets. Also, the plural nozzles of Harada are inherently capable of having exactly the same effect as applicants' plural nozzles.

Applicants have argued that no manifold is present in Fig. 6 of Harada. It is noted, however, that Fig. 6 of Harada actually does include a schematic drawing of a gas supply manifold.

Regarding the rejections of claims 3, 10 and 19, applicants have argued that it is impermissible to use applicants' prior art admissions to find motivation to modify Harada. It is noted, however, that when the specification identifies work done by another as "prior art", the subject matter so identified is treated as admitted prior art, and it is permissible and proper to use the description of the admitted prior as a basis for rejecting the claims. See *In re Nomiya*, 184 USPQ 607. It is noted also that Fukada also teaches the use of a level sensor (see element 15 of Fig. 7 of Fukuda, for example) as claimed in applicants' claims 3 and 10. It is further noted that Fukuda also teaches the conventional nature of using of a subatmospheric pressure in his vaporizer tank 3 (see col. 8, lines 35-48 and claim 16 of Fukada, for example) as claimed by applicants in claim 19.

Applicants have argued that the openings 7 of nozzle plate 4 of Bowles are not in accordance with claims 1 and 9 as amended, which recite "said planar dispersed pattern comprising radially extending rows of said plurality of openings. It is noted, however, that Fig. 3 of Bowles illustrates a six of the openings 7 dispersed in a planar pattern on nozzle plate 4. Taking outlet pipe 13 of Fig. 4 as a center point, a first straight line can be drawn through the lower left hole, the center hole 13 and the upper right hole. A second straight line can be drawn through the upper left hole, the center hole 13 and the lower right hole. A third (horizontal straight line can be drawn through



the far left hole, the center hole 13, and the far right hole. These three straight lines are radially extending rows. It is noted that the dictionary definition of "row" (see attached definition) includes "a number of objects arranged in a usually straight line" and also "the line upon which such objects are arranged" (emphasis added). Therefore, the word "row" can refer to the line on which objects are arranged, instead of the objects themselves. Each one of the above described straight lines in Fig. 3 of Bowles is itself a "row", and these rows extend radially because they pass through the center hole 13. It is further noted, however, that the exact pattern of placement of the nozzle pipes 37 of Fig. 6 of Harada (and the accompanying nozzle plate holes that the pipes 37 pass through) must be considered prima facie obvious in the absence of a showing of unexpected results, commensurate with the scope of the claims.

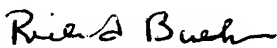
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Richard Bueker  
Primary Examiner  
Art Unit 1763